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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Kwan-Hee Lee

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8679

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EXAMINER

HINES, ANNE M

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 08/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/820,845	<b>Applicant(s)</b> LEE, KWAN-HEE	
	<b>Examiner</b> Anne M. Hines	<b>Art Unit</b> 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15, 22 and 23 is/are pending in the application.
- 4a) Of the above claim(s) 16-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15, 22 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

***Election/Restrictions***

Applicant's election with traverse of Group I, including claim(s) 1-15 and 22-23 in Application No. 10/820845, filed on June 21, 2006 is acknowledged.

The traversal is on the ground(s) that:

- (i) Both product claims of Group I and the method claims of Group II would be found in references in the same field of technology and an examination of both sets of claims would not cause undue burden upon the Examiner.
- (ii) The Examiner has not set forth a reason that there would be a serious burden to examine Group I and Group II together.

This is not found persuasive for the following reasons:

The Examiner, in order to establish reasons for insisting upon restriction after distinctness has been demonstrated, must show by appropriate explanation that the following condition is held: there is a separate classification. This shows that each distinct subject has attained recognition in the art as a separate subject for the inventive effort, hence also a separate field of search (See MPEP § 808.02 A).

Applicant's traverse on the grounds that it is not shown that a serious burden exists on the examiner is not found to be persuasive since the showing that the two claimed inventions have separate statutory classification and different fields of search are indicia of undue burden (See MPEP 808.02 and MPEP 803(b)).

The requirement is still deemed proper and is therefore made FINAL.

Claims 16-21 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on June 21, 2006.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-4, 7-13, 15, 22, and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Arnold et al. (US 7038373).

Regarding claim 1, Arnold discloses an organic electroluminescent device comprising a substrate (Fig. 3, 12; Column 4, lines 36-37); a lower electrode formed on the substrate, the lower electrode having an upper surface at a first step difference above the substrate (Fig. 3, 18; Column 4, 40); a pixel define layer formed on the substrate and covering one portion of the lower electrode while exposing another portion of the lower electrode, the pixel define layer having an upper surface at a second step difference above the substrate (Fig. 3, 17; Column 4, line 38); an organic thin film layer formed on the lower electrode (Fig. 3, 19; Column 4, line 42); and an

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upper electrode formed on the organic thin film layer (Fig. 3, 30; Column 4, line 52), wherein the second step difference of the pixel define layer is less than or substantially equal to the first step difference of the lower electrode (Fig. 3, 17 & 18).

Regarding claim 3, Arnold further discloses wherein there is a buffer pattern between the lower electrode and the substrate and which has a predetermined thickness sufficient to reduce a difference between the first and second step differences (Fig. 3, 16; Column 4, lines 44-47).

Regarding claim 4, Arnold further discloses wherein a thickness of the pixel define layer above the substrate is substantially the same as or less than a sum of thicknesses of the lower electrode and the buffer pattern above the substrate (Fig. 3, 16, 17 & 18).

Regarding claim 7, Arnold further discloses wherein the lower electrode comprises a transparent, opaque, or reflective electrode material (Column 6, lines 54-60; Column 7, lines 43-67).

Regarding claim 8, Arnold further discloses wherein the lower electrode is platinum (Column 7, lines 43-67).

Regarding claim 9, Arnold further discloses wherein the lower electrode is ITO (Column 7, lines 43-67).

Regarding claim 10, Arnold discloses an organic electroluminescent device comprising a substrate comprising a plurality of pixel regions (Fig. 3, 12; Column 4, lines 36-37); lower electrodes formed in the corresponding pixel regions, and having upper surfaces (Fig. 3, 18; Column 4, 40); buffer patterns formed between the substrate and

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the corresponding lower electrodes (Fig. 3, 16; Column 4, lines 44-47); pixel define layers disposed between adjacent pairs of the lower electrodes and having upper surfaces (Fig. 3, 17; Column 4, line 38); organic thin film layers formed on the corresponding lower electrodes (Fig. 3, 19; Column 4, line 42); and an upper electrode formed on the pixel define layer and the organic thin film layers (Fig. 3, 30; Column 4, line 52).

Regarding claim 11, Arnold further discloses wherein the upper surface of each of the pixel define layers is substantially coplanar with or lower than the upper surfaces of the corresponding adjacent lower electrodes due to the corresponding buffer pattern (Fig. 3, 16, 17 & 18).

Regarding claim 12, Arnold further discloses wherein each buffer pattern smoothes a difference in step differences between adjacent pairs of the lower electrode and the step difference of the corresponding pixel define layer and has a thickness which is determined according to thicknesses of the lower electrode and the pixel define layer (Fig. 3, 16, 17 & 18).

Regarding claim 13, Arnold further discloses wherein each buffer pattern includes an organic insulation film or an inorganic insulation film (Fig. 3, 16; Column 5, lines 6-10). Note that since Arnold discloses the buffer pattern as an insulating layer the Examiner considers Arnold's insulating layer to be either organic or inorganic, since all materials are either organic or inorganic.

Regarding claim 15, Arnold further discloses wherein the lower electrode comprises a transparent, opaque, or reflective electrode material (Column 6, lines 54-

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60; Column 7, lines 43-67), and more specifically wherein the lower electrode is platinum (Column 7, lines 43-67) or ITO (Column 7, lines 43-67).

Regarding claim 22, Arnold discloses an organic electroluminescent device comprising a substrate (Fig. 3, 12; Column 4, lines 36-37); a first electrode formed to a first height above the substrate (Fig. 3, 18; Column 4, 40); a pixel define layer formed to a second height above the substrate so to define the first electrode within a corresponding pixel without covering a portion of the first electrode (Fig. 3, 17; Column 4, line 38); a second electrode (Fig. 3, 30; Column 4, line 52); and an emitting layer disposed between the first and second electrodes (Fig. 3, 19; Column 4, line 42), wherein the first height is substantially the same as or greater than a thickness of the pixel define layer (Fig. 3, 17 & 18).

Regarding claim 23, Arnold further discloses wherein a buffer pattern is disposed between the substrate and the first electrode (Fig. 3, 16; Column 4, lines 44-47), wherein a combined thickness of the buffer pattern and the first electrode is substantially the same as or greater than a thickness of the pixel define layer (Fig. 3, 16, 17 & 18).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 5-6, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnold et al. (US 7038373) in view of Fujita et al. (US 6758538).

Regarding claims 2 and 14, Arnold teaches the invention of claims 1 and 10, respectively, comprising a thin film transistor (Fig. 3, 14; Column 4, line 37) and wherein both the pixel define layer (17) and the buffer layer (16) are insulating layers and further where the buffer layer is patterned through photolithography (Column 5, lines 6-10). Arnold is silent regarding the method of making the pixel define layer and fails to teach wherein the pixel define layer is a thermosetting resin or a photosensitive layer.

However, one of ordinary skill in the art would reasonably contemplate forming the pixel define layer and the buffer layer through the same method, taught by Arnold as photolithography, since they are both insulating layers and both are formed before the organic emitting layers (evidenced by the fact that organic layers, 19, are formed over both insulating layers 16 and 17) preventing any deleterious effects from the photolithography process on the organic emitting layers.

Also, in the same field of endeavor of insulating layers formed through photolithography, Fujita teaches a photosensitive polyamide resin as suitable for forming patterned insulating layers through photolithography for an organic electroluminescent device (Column 11, lines 14-18) in order to provide a patterned insulating film between the thin film transistor and electroluminescent layers (Column 8, line 61 to Column 9, line 3).



Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Arnold to have the pixel define layer patterned through photolithography, like the buffer layer, since they are both insulating layers and both are formed before the organic emitting layers, which prevents any deleterious effects from the photolithography process on the organic emitting layers, and to modify the composition of the insulating layer, as disclosed by Fujita, to have the insulating layer be a photosensitive polyamide resin in order pattern the layer through photolithography and to choose from one of the materials disclosed by Fujita, since Fujita teaches the suitability of using an insulating layer patterned through photolithography formed of a photosensitive polyamide resin and it has been held to be within the general skill of an artisan to select a known material on the basis of the intended use. See MPEP 2144.07.

Regarding claim 5, Arnold teaches the invention of claim 3 comprising a thin film transistor (Fig. 3, 14; Column 4, line 37) and wherein the buffer layer (16) is an insulating layer patterned through photolithography (Column 5, lines 6-10). Arnold is silent regarding the material of the buffer layer patterned through photolithography.

In the same field of endeavor of insulating layers formed through photolithography, Fujita teaches an inorganic oxide,  $\text{SiO}_2$ , as suitable for forming patterned insulating layers through photolithography for an organic electroluminescent device in order to provide a patterned insulating film between the thin film transistor and electroluminescent layers (Column 8, line 61 to Column 9, line 30).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Arnold to modify the composition of the insulating buffer layer, as disclosed by Fujita, to have the insulating layer be an inorganic oxide,  $\text{SiO}_2$ , in order pattern the layer through photolithography and to choose from one of the materials disclosed by Fujita, since Fujita teaches the suitability of using an insulating layer patterned through photolithography formed of an inorganic oxide,  $\text{SiO}_2$ , and it has been held to be within the general skill of an artisan to select a known material on the basis of the intended use. See MPEP 2144.07.

Regarding claim 6, Arnold teaches the invention of claim 3 comprising a thin film transistor (Fig. 3, 14; Column 4, line 37) and wherein the buffer layer (16) is an insulating layer patterned through photolithography (Column 5, lines 6-10). Arnold is silent regarding the material of the buffer layer patterned through photolithography.

In the same field of endeavor of insulating layers formed through photolithography, Fujita teaches a photosensitive polyamide resin as suitable for forming patterned insulating layers through photolithography for an organic electroluminescent device (Column 11, lines 14-18) in order to provide a patterned insulating film between the thin film transistor and electroluminescent layers (Column 8, line 61 to Column 9, line 3).

Therefore, it would have been obvious to one of ordinary skill in the art to modify the invention of Arnold to modify the composition of the insulating buffer layer, as disclosed by Fujita, to have the insulating layer be a photosensitive polyamide resin in

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order pattern the layer through photolithography and to choose from one of the materials disclosed by Fujita, since Fujita teaches the suitability of using an insulating layer patterned through photolithography formed of a photosensitive polyamide resin and it has been held to be within the general skill of an artisan to select a known material on the basis of the intended use. See MPEP 2144.07.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne M. Hines whose telephone number is (571) 272-2285. The examiner can normally be reached on Monday through Friday from 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (571) 272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anne M Hines

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8/2/06

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**PRIMARY EXAMINER**